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LABOR IN THE FAR NORTH

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LABOR

NORIL'SK MINING, METALLURGICAL COMBINE DEVELOPMENT

Editorial Note

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian
No 4, Apr 82 pp 67-68

[Article: "Man in the North"]

[Text] In the decisions of the 26th CPSU Congress the task was set to expedite the increase of the economic potential of the eastern regions. In Siberia the rapid growth of the fuel industry, electric power engineering and nonferrous metallurgy is envisaged. At the congress it was noted that the industrial development of new regions is important on both the social and the political levels. The production collectives emerging there bear high standards of labor and daily life, a new modern rhythm of life. Another vivid chapter is being added to the chronicle of heroic accomplishments of the Soviet people.

What has been said with every right pertains to the collective of the Noril'sk Mining and Metallurgical Combine. This is a vivid and convincing example of how under difficult, at times incredibly difficult conditions the richest natural resources were placed at the service of the national economy. The experience of the Noril'sk Mining and Metallurgical Combine can be used when developing new regions in the northern and eastern parts of the country, where at present about 1 million people live, new natural resources are being discovered and committed to the economic turnover.

Noril'sk is bold technical and economic decisions, a precise social and personnel policy, which is being constantly improved. It is new people, new problems. Economic managers, an engineer, a medical man and a scientist tell about this in the selection. They cover different aspects of a single process--the formation of the individual and the collective in a city beyond the Arctic Circle, which for the present is unique.

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Combine Development

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian
No 4, Apr 82 pp 68-79

[Article by Hero of Socialist Labor and Deputy of the USSR Supreme Soviet B. I. Kolesnikov, director of the Noril'sk Mining and Metallurgical Combine imeni A. P. Zavenyagin: "Levels and Prospects of Development"]

[Text] The Base for Production

The Noril'sk Mining and Metallurgical Combine is a multisectorial production economics complex, which includes the working of deposits of copper-nickel and other ores, the complete technological cycle of the production of heavy nonferrous metals, capital construction, large-scale port and warehousing services, developed transport, a design institute, several scientific research organizations and the sphere of the municipal, cultural and personal service of the population of the cities of Noril'sk and Dudinka. In other words, it is a socioeconomic territorial production complex.

Rich ore raw materials and nearly all the secondary nonmetallic materials, minerals for metallurgy and construction and fuel resources are favorably combined in our region. The complete cycle of the metallurgical processing of ore raw materials for obtaining first crude, and then electrolytic metals is being organized on this basis.

The copper and nickel obtained at the combine are the least expensive in the country. Not by chance was the task set back at the 25th party congress to ensure the further development of the Noril'sk Mining and Metallurgical Combine and to increase the production of metals from the raw materials of the combine.

During the formation of the combine and the city the production and social infrastructure was created. Its specific nature was dictated by the conditions of production and living in the north, on the one hand, and by socioeconomic policy, on the other. Thus, its own construction materials enterprises were created--the delivery from the "mainland" is too expensive. Or another example: personnel trained locally, and not at educational institutions of other cities of the country, are more suitable for Noril'sk. The degree of centralization of all the spheres of activity, which are connected with the provision of normal conditions for living in the region (the centralized distribution of living space and local public consumption funds, the unified solution of the problems of transportation, trade and personal service), is high. This distinguishes Noril'skiy Rayon favorably from other regions of industrial development in the north.

Here are a few figures for a characterization of the infrastructure. In Noril'skiy Rayon there are adequate heat and energy resources--gas and coal. The capacity of the heat supply system is 10 percent higher than what prerevolutionary Russia had. The entire heat supply is centralized. There is a small deficiency of water supply, but owing to the capacities of the underground water intake at Talnakh, in the region of Kayyerkan, on the Noril'skaya River the need for water will be met for 20 years hence.

Great importance is being attached to the development of transportation. New highways and railroads are being built, the operating ones are being renovated. In 1980 the runway was renovated and an air terminal was built. Sea navigation can be carried out nearly year round.

A house building combine, which produces the quite good series No 84, has been put into operation in Talnakh. Series No 112--specially for Siberia, which is quite complex--is being introduced. The cement plant is designed for an annual output volume of 600,000 tons, the production of lime has been organized, the production of three-ply panels has been organized at the plant of mineral wool. The old brick plant with its high labor intensity of production will give up its place to a new one.

The city vegetable storehouse has a capacity of 5,000 tons. A program of the enlargement of the warehouse capacities for the administration of trade has been compiled. Noril'sk is supplied with milk (for the present nonassortmental milk). It is planned to build in Talnakh the dairy shop needed by the settlement. During the 11th Five-Year Plan a dairy plant will begin operation. The construction of a bakery has been completed, its products will be supplied, in particular, to a new specialized bread store. Approximately 2 more years will be needed to meet the need of the residents for sausages. The new shop of meat products began back in 1981 to produce items of a rich assortment. The construction of a new dairy plant and a shop for the processing of venison is planned during the 11th Five-Year Plan.

The number of hogs makes it possible to slaughter 10,000-12,000 a year. It is not feasible, however, to increase it further, because the fodder base--food scraps--is limited. It is necessary to direct the main attention to the raising of large-horned cattle. With the support of the kray and rayon party committees a hothouse farm with an area of up to 20 hectares is being set up near Krasnoyarsk. Crops are already being harvested at the hothouses of Noril'sk, their area is 2 hectares. The Tayezhnyy Sovkhoz annually provides the region with up to 20 million eggs. It is planned to set up a broiler farm, the first section of which is designed for 1,000 tons of meat a year.

According to the data of Krasnoyarsk sociologist-urbanologists, Noril'sk holds first place among the cities of the kray in the number of physicians and junior medical personnel; in the volume of personal services for the population, the number of seats at movie theaters and clubs; in the level of skills of cultural and educational personnel.

During the Ninth Five-Year Plan Noril'skiy Rayon received 675,000 m² of housing, 10 kindergartens, 8 schools, a sports complex, a number of dining rooms and so on. During the 10th Five-Year Plan 915,000 m² of usable area in apartment houses, kindergartens for 4,450, schools and vocational and technical schools for 12,000 students, polyclinics for 1,500 visits a shift, hospital buildings for 400 beds, movie theaters, gymnasiums, stores, dining rooms for 4,000 seats and a sanatorium for 750 in Moscow Oblast were added to this.

The State and the Prospects

Each mining enterprise traverses the following path: conception, formation, flourishing, aging and, finally, closing. It is important to know at what phase the combine was yesterday, is today and will be tomorrow.

Today, when the first section of the Nadezhda Metallurgical Plant has been put into operation, the stage of intensification has begun. It is time to halt the rapid increase, as was the case recently, of the production capacities of the basic process stages and to assimilate what has already been built. Such a decision is explained by a number of objective requirements and circumstances.

It is necessary to consolidate and broaden the ore base and the enrichment process. Geologists have discovered reserves of ore raw materials for three decades in the future, while with additional measures--for all four decades. However, the reserves of rich ores are being depleted. Precisely for this reason we have begun the development of new technologies of metallurgical production and are engaging in earnest in the renovation of the old nickel and copper plants.

The situation with personnel also worries us. So far Noril'sk has not experienced difficulties with the supply of manpower. However, the gap in wages between the Arctic and the "mainland" is decreasing and, consequently, people, having the opportunity to earn well under more favorable conditions, will not want to come to Noril'sk. Moreover, it is inadvisable to hire everyone who wishes to, people with sound physical and mental health are needed.

It is hardly wise to permit an increase of the size of the population of the city beyond 300,000. If the growth of the population is not checked, it will be impossible to maintain the previously achieved growth rate of the social infrastructure, the security of those living in Noril'sk will decrease. In this case by 1990 we will not be able to provide every Noril'sk family with a separate apartment, foodstuffs in conformity with the rational norms, medical service and so forth. Now the balance of the production base, the social infrastructure, manpower and manpower resources must be achieved, yet not by spasmodic growth, but by stable intensive development. Here is an approximate scheme of this development: the operational development of the ore base; the adoption of new technological processes; the expansion and improvement of the construction industry; the solution of social problems.

What measures is it necessary to implement in this connection? It will be necessary to introduce advanced technologies of ore mining with the use of highly productive self-propelled mining equipment; to expedite the packing of the goaf with concrete mixes; to expand and renovate concentration and metallurgical enterprises; to modernize the basic technological equipment and to intensify the technological processes. Thus, during the 11th Five-Year Plan the volume of packing work will increase 1.7-fold and in 1985 will come to 3 million m³. A mine for the extraction of 2 million tons of limestone will be put into operation, the extraction of anhydride will triple (to 1.5 million tons). The capacities of power engineering will increase. It is planned to put into operation 1 million m² of living space. Children's preschool institutions for 7,000, as well as schools for 11,000 students, a polyclinic for 2,000 visits and a 330-bed hospital will be built. All this, of course, will increase the cost of the smelted metal and requires a reasonable economic approach.

The Noril'sk Combine is not confined to the city and its environs. The production potential and the residential district should, apparently, assume the load of a zone with a radius of 300-400 km. Noril'sk will become a base city for the development of the north. In the region of Khatanga, on the shore of the Kotoy,

geologists have discovered a large deposits of apatites. In conjunction with the enormous possibilities of the production of sulfuric acid their working may culminate in the development of a mining and chemical complex and the production of mineral fertilizers. The railroads being built will provide a new stimulus for the study and use of the natural resources in the okrug.

It is worth recalling that a small settlement was initially contemplated at the site of Noril'sk, but a city appeared. After this Talnakh appeared. The development of works with the use of coal, sulfur and apatites is transforming Noril'sk into a territorial production complex; the construction of transportation lines and the assimilation of the zone of their economic development are transforming it into an economic region. The prospects, thus, are clear.

The Social to the Forefront

In the past decade the management of the combine has been displaying more and more attention to the individual at the works and to social problems. The point is that the situation with manpower resources is becoming complicated, the material and spiritual level of the workers and their need for the meaningful spending of leisure time are increasing. The considerable investments in productive capital and the most complex technological equipment do not yield the proper return, if there is no attention to the psychology of the people, their working conditions, skills and the sociopsychological climate. Whereas previously at the combine they believed, for example, that social and living conditions were the affair of the city, while the enterprise should engage in production, today such demarcations are no longer made. An administrative and personal service combine of the copper plant, which provides more than 100 different services (and, in order to use them, one need not leave the premises), recently began to operate, it is possible without exaggeration to call it a standard of service. The combine radically changed the working and living conditions of the people, which did not take long to affect their attitude toward work and the enterprise.

Everyone understands that it is necessary to invest more assets in the social development of the collective. But they must also be spent wisely. Unfortunately, so far there are no sufficiently reliable tools for determining the economic effectiveness of the measures on the increase of the level of social development, for this reason one has to rely on intuition and the competence of the specialists involved in this. It is necessary, however, to back decisions with statistical data and on their basis with a competent economic analysis. For example, we need a clear picture of the state of affairs in the supply of housing. For the gathering and processing of the data we developed a system of the recording of the available housing on a computer and algorithms for the sound distribution of housing. Only a computer-assisted analysis helps to solve the problems connected with the state of health of the workers, with the personnel policy and the training of managers.

Our combine is, perhaps, in a slightly more privileged position as compared with other enterprises. It has the right to perform social and general construction at the expense of production construction, has large reserves and has been invested with considerable rights. The Noril'sk Mining and Metallurgical Combine can build projects with a cost of up to 6 million rubles without special authorizations (while on the "mainland" it is up to 3 million rubles). When the estimated cost of the

theater exceeded the set limit, the combine turned for support to the CPSU Central Committee and the USSR Council of Ministers. The Palace of Pionners, a hotel and a 1,000-bed hospital were built with the permission of the ministry, while the decisions on the construction of apartment houses, dining rooms and kindergartens are made independently.

Thus, the opportunity to solve our own problems exists. Of course, material difficulties are encountered, but we, as a rule, seek and find a solution. The concept "socialist initiative" does not sound foreign for many of our economic managers. We also have "our own" planning institute. As a whole such a conglomerate as the Noril'sk Mining and Metallurgical Combine provides specific advantages which it is necessary to know how to use.

When not guided by a plan, it is possible to make many mistakes. The collective of the combine took aim at the not too distant future--1985, its 50th anniversary. Preparation is now already under way, the future has been outlined, calculations have been made. The annual plans have been compiled as stages of the achievement of a single goal. Attempts to look ahead were also made previously, but at that time science was still not able to help do this soundly and convincingly enough.

Looking back, it is easy to see the merits of the planning of social development. Take, for example, social amenities--a multisectorial system: here there are schools, polyclinics, children's preschool institutions and vacation centers. Without a comprehensive plan it is no wonder that something is overlooked. Thus, at one time the problem with kindergartens and nurseries was very pressing. In particular, the fact that the size of the population was incorrectly predicted (180,000 instead of 240,000) and mistakes were made in determining the number of grandmothers and grandfathers, had an effect here.

The work on the plans of social development and their fulfillment brought great resources into play and increased the intellectual potential of the workers of the combine. A large number of discussions of the most diverse questions are held regularly, and the speeches do not pass without leaving a trace, decisions are made immediately, on the spot.

When compiling the plan of social development, it is necessary to answer the question, who in the future will make up the contingent of "the largest winter quarters in the country." A permanent population has formed in the city. Half of the workers have a length of service of 20-25 percent, the overwhelming majority have a length of service of more than 10 years. Noril'sk residents 18 to 40 years old feel the best. Up to the age of 45, as a rule, they do not get sick and only after 50 begin to turn to physicians. Much depends on how the habit of pursuing physical culture and sports is inculcated, on what we begin to work with kindergartens and health groups for "elders." By creating the material base for the pursuit of sports, we are thereby training personnel and attaching them. Parents, as a rule, do not take healthy children away to the "mainland" and do not leave themselves until their children have finished school. Economical decisions must be sought in public health and sports. In the opinion of specialists, the most effective type of sports for the north is swimming. So all the Noril'sk residents who come to Sochi know how to swim. At the kindergartens of the city all the children before school also master swimming.

The analysis shows that the bulk of the "unstable" workers live in dormitories. At the beginning of the 11th Five-Year Plan the opportunity will arise to treat more fastidiously the candidates for a job in Noril'sk, because we will be able to offer acceptable housing to all people with families. By 1990 people with families and young people wishing to start families in Noril'sk will predominate among the residents. While after 1990 the drawbacks of the climate for Noril'sk residents may be reduced to a minimum by the efficient social organization of life--excellent apartments, schools, cultural and health institutions, good supply with foodstuffs and industrial goods and, of course, advantages with respect to the length of vacation, wages and so forth.

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Social Planning

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 4, Apr 82 pp 79-90

[Article by I. S. Aristov, deputy director for personnel and social development of the Noril'sk Mining and Metallurgical Combine imeni A. P. Zavenyagin: "Social Development of the Collective"]

[Text] Improve Social Management

The situation, in which managers, when examining questions of the development of production, inevitably also touched upon the social prospects, formed historically in Noril'sk. Everything began in the distant 1930's, when the first master plans of the construction of the combine and the city were drawn up. The present state of the material base and the quite clear prospects of its further expansion are advancing new tasks in the area of social planning. The growth of the volumes of the extraction and processing of ore raw materials and the increase of other, at first glance exclusively quantitative parameters of production are leading in the end to qualitative changes in the very nature of the development of the region. The demands on the content and directions of the regional economic and social policy are increasing.

Our experience has shown that the organization of the control of social processes, including the planning of social development, is imperfect. It is necessary to coordinate more efficiently the efforts of enterprises, institutions and organizations on the level of the city and, at times, the kray and the ministry. Due to inadequate coordination and incompleteness the effectiveness of social, economic, technical and organizational measures and plans is decreasing.

The planning work at the enterprise should encompass the social aspects as equal sections. Here the role of the economic planning and other services, which are capable of helping sociologists, is increasing. In our opinion, today the managers should be responsible for the fulfillment of the social sections as they are for the production plans.

Such a problem as the large number of diverse comprehensive plans has been discussed repeatedly in the functional subdivisions and at the enterprises of the combine. The need has arisen to put the system of planning in order and to elaborate

standards of the enterprise, which regulate the technology of compiling plans. As an example let us take the comprehensive plan of retooling and production efficiency, which is drawn up annually (and according to the established standard) by the scientific and technical administration and is then approved by the director of the combine. It is also expedient to use in social planning the principles by which the administration is guided (maximum standardization, the coordination of financing, economic efficiency and organizational directions, the sequence and time limit of the individual parts of the plan).

Up to now the system of social management has remained incomplete. But success in the planning of social development also depends on it. It would be reasonable to distinguish social management as a special administrative function of the enterprises, having set up a special subdivision for the study and preparation of decisions in this area.

The incompleteness of the system of social planning becomes especially noticeable when compared with other management systems. Thus, the management of technical development is carried out under the supervision of the chief engineer by the services of the chief process engineer, mechanical engineer and others; the deputy director for economics and the economic services engage in production economics development. But the sociological and sociopsychological spheres are left without administrative management and staffs. It is obvious that a chief specialist for social management with a planning and research staff should appear in the structure of management. In the subdivisions of the combine (in accordance with the experience of other enterprises of the country) the first deputy director for personnel and social development or the chief of the personnel division could be such a chief specialist. All the services concerned to one extent or another with social problems could be placed under their direct or functional subordination. In this connection it will be necessary to strengthen the staff of the personnel division and to revise its structure and functions. Unfortunately, for the present the former name of this service--the division of hiring and firing--corresponds more to traditional practice.

The sociological services with the following functions: the gathering of information; the study of individual social problems; the preparation of specific decisions and recommendations; the drafting of long-range plans, could constitute the basis of the staff of the chief specialist for social management. Such subsystems as social development and the sociopsychological climate in the collective have been included in the automated control system for enterprises. Obviously, other organs for the management of the processes of the social development of production collectives will also be needed.

One of the most important means of solving the problem is the enlistment of all the workers in the drafting of plans and the monitoring of their fulfillment. Such a form, which has been noted repeatedly in the press, as conferences of the workers of the enterprise--a collective organ of management--is appealing. The members of the conferences are elected by secret voting at the general meetings of the primary production units for a term of 5 years. One-fifth of the composition should be renewed annually. Such a term is sufficient for the mastering of the skills and abilities, which are necessary for participation in social management. The plans of social development should be considered and approved precisely at such conferences.

True, the sufficiently good information of the workers about various questions of production and the vital activity of the collective and their extensive participation in the drafting and implementation of the plans of social development in themselves still do not solve all the problems. But this is an important element of the system of the social management of the collective. Another form is meetings of experts. At the combine attempts have already been made in creative, informal debates to discuss individual questions, for example, a tree of goals of the social development of the collective. They must be stimulated in every possible way.

The Diagnosis of Social Problems

In the area of social policy at the combine so far only the first modest results have been obtained, but, it must be admitted, today they are already having a substantial influence on the results of management. In 1978 the division of sociology conducted a survey of specialists, so that they would name the problems, the solution of which requires priority attention. There were named:

environmental protection;

the improvement of the production management system;

the provision of children's preschool institutions;

the improvement of housing conditions;

the adoption and development of an automated control system;

the development of the system of trade, transportation, medical service;

the improvement of the forms of relaxation.

The survey identified problems which previously had not be considered at all, for example, the need for job placement in regions with a more favorable climate, the provision of living space and other living conditions to those who had given the combine 20 years or more. The results of this diagnostic study were the basis for social planning for the 11th Five-Year Plan and will also be used in the future.

The social and cultural development of Noril'sk did not proceed without contradictions. Here for the present the development of the production and nonproduction spheres has not yet been balanced, owing to which a number of economic problems have not been solved, the use of manpower resources is not being planned effectively enough.

Noril'sk is included in the group of cities with a high level of development of the social infrastructure. However, taking into account the specific nature of the Far North, it is hardly possible to be content with the small lead over the "mainland" cities. A "competitive" standard of living, which would be based on new sanitary norms of living and other standard documents, which take into account the specific nature of the territory, is needed in the north. It is necessary to develop such a system of criteria of the way of life in the Arctic, in case of which the further increase of the standard of living of Noril'sk residents should take place not due to the increase of wages, but first of all on the basis of the

development of public consumption funds, which presume those benefits which a person cannot accumulate for future use and take away with himself.

The level of the turnover and periodic replacement of personnel for the combine as a whole is respectively 12 and 28 percent, while at some enterprises (for the most part those which are reinforced with manpower by newly arriving young people) it is 25 and 45 percent. Is this not evidence of shortcomings in the system of benefits which are in effect in the Noril'sk Industrial Region, in cultural and personal service and the organization of leisure, in the system of education and the organization of labor?

A mighty means of work with personnel is training. A significant portion of the workers is constantly being renewed. The proportion of young people in Noril'sk is increasing, and, moreover, production is being expanded and updated, the needs for the increase of the educational level of the workers are increasing. Among the 2,000 foremen (among whom only 60 are experienced workers, while the rest have a higher and secondary specialized education) 1,700 are studying. Scientific and technical conferences of the enterprises and the combine, in which young specialists participate, are held annually; their recommendations are being adopted in production. More than 2,000 young specialists are inventors and rationalizers. At the Club of Business Meetings young people discuss the problems of the combine with leading specialists and the management.

During the year approximately 30,000 workers, including 6,000 engineering and technical personnel, undergo training in the system of economic education. About 20,000 people study and improve their skills. The base of the Noril'sk Evening Industrial Institute is constantly being enlarged, a day department for the training of construction engineers and specialists in construction and road machinery is in operation.

Several educational course combines operate at our enterprises, one of them trains the operators of self-propelled diesel machines for subsurface mines and is, perhaps, the best equipped in the sector. During the years of the 11th Five-Year Plan we intend to build two second city vocational and technical schools, the city also needs a mining and metallurgical tekhnikum and a tekhnikum of Soviet trade.

In our opinion, the questions of the training of highly skilled workers under the conditions of modern production require more attention on the part of planning organs and the appropriate departments. In addition to the direct increase of the financial resources being allocated for these goals, the centralized production of hardware components, training equipment and educational films and the shortening of the period of training of workers with leave from work are also needed, since the educational level of young people has increased. A different approach to the training of personnel of the highest skills will also be required. Due to the great interchangeability the saturation with them here should be higher than in the middle zone of the country. We need "engineers of the northern design," whom not one higher educational institution for the present is training. Local managers prefer to work with young specialists, and not with experienced specialists who have come to the combine by invitation. It is possible to cultivate stability, self-control, boldness, initiative and the ability to make decisions under conditions of risk in young miners, shaft builders and metallurgists, who have come from higher educational institutions. We hope to receive from USSR Gosplan

permission to attach to our region higher educational institutions, the graduates of which will be "brought" to the enterprises of the combine.

Today the need for the close connection of the general educational and special training of young people with productive labor is being strongly felt. The sociological studies conducted in our city have revealed serious shortcomings in this area. At many schools in the labor lessons the children and adolescents become acquainted with some operations or others, but do not acquire lasting labor skills and do not make products to be marketed. They do not know what labor productivity, output norms, cost sheets, wages, production efficiency, management, the interrelations in the labor collectives and others are. And the superficial mastering of dissociated labor operations is far from the requirements of thorough and complete knowledge of industrial production, which face young people today.

Some experience of training young people for labor in educational production brigades, at summer labor camps, educational course combines, educational shops of enterprises, in student construction detachments and so forth has been gained in the country. Unfortunately, here all these forms are being used inadequately. Our interschool educational production combine provides prevocational, but not vocational training and deals little with the vocational guidance of school children. The technical creative work of children and the material equipment of circles and stations of young technicians differ greatly from the requirements of modern production.

The children of Noril'sk residents due to the greater material security of their parents have been placed under "hothouse" conditions and are even farther removed from labor than people of their own age in other regions. Many instructional documents, which direct the attention of enterprises to the improvement of patronage work at schools and vocational and technical schools and to the development of children's technical creative work and tutorship, have been promulgated in recent times. The fulfillment of the outlined measures will ensure a substantial improvement of the training of personnel.

The Program of Growth

Today comprehensive goal programs are being drafted everywhere, including here. The new method did not have to be imposed on us--the need for it is felt by many, while its usefulness came to light immediately. We first set to work on the program "Manpower Resources," which turned out to be too abstract. The analysis made with the assistance of the Institute of Economics and the Organization of Industrial Production of the Siberian Department of the USSR Academy of Sciences made it possible to formulate a concrete goal: to control the migration of the population of Noril'sk. Such a formulation is explained, on the one hand, by the decline of the growth of the volumes of basic production and, on the other, by the interests of the residents of the city and the living conditions of the population.

In contrast to other cities, where this goal was also set, but was not fulfilled, in the program it is planned not only to "close" entry (on the contrary, it may even increase), but also to stimulate departure from Noril'sk. Here we want to direct our attention to the evidence of medical men and the interests of the preservation of the health of the workers themselves. Of course, the enterprise should help those who will leave with transportation, the arrangement of housing

and daily life on the "mainland." Thus, the goal of the program is exceptionally humanistic.

The program approach is being used both in the planning of social development as a whole and in the planning of its individual aspects, particularly education. It is obvious that a program of the improvement of working conditions, which remain unsatisfactory and may cause serious social consequences, is needed. This work is not easy. And the social headquarters, the creation of which was proposed above, should contain systems specialists and specialists who are able to use the goal program method. It is inexpedient, at least at present, to create a special subdivision, but it is necessary to organize a sociological laboratory in which such specialists would be included. At the combine the shortage of competent experts in this area is being keenly felt, but it is worth obtaining if only a few people, as it would be possible to spread knowledge through the system of economic education or in some other form.

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Social Processes

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 4, Apr 82 pp 90-95

[Article by Yu. A. Barklyanskiy, chief of the Division of Sociology of the Noril'sk Mining and Metallurgical Combine imeni A. P. Zavenyagin: "For the Control of Social Processes"]

[Text] The planning of the social development of the collective began in 1972 with the creation of the sector of sociology within the central laboratory of the scientific organization of labor at the combine. The first plan was drafted in 1973, the next one was drafted before the end of the five-year plan and then for 1976-1980. The work on the plan of the 11th Five-Year Plan was developed even more extensively.

The shortcomings of planning were identified and taken into account at each stage. For example, the structure of the 1973 plan was represented by the following sections: the history of the development of the combine, the improvement of the social structure of the collective, the improvement of working conditions, the increase of the standard of living, the improvement of the cultural and everyday conditions of the workers and the development of social activeness. The inclusion in the plan of the first section made it possible to formulate more precisely the problems facing us: in planning the future, one must know the past. The last sections are traditional, they are recommended in all the methods.

The new section "Environmental Protection" was included in the 1974-1975 plan. Its appearance was supported by thorough technical and economic substantiations, to which, in particular, the development of advanced technologies at the Nadezhda Metallurgical Plant attests. The sections "Social Aspects of the Improvement of Management" and "The Formation of the Socialist Way of Life" appeared in the plan for the 10th Five-Year Plan. The goal program approach was used in the drafts for the 11th Five-Year Plan.

The first plans of social development were based on statistical data, the materials of the technical and economic plans and accounting and the programs of the activity of public organizations. The results of the sociological studies conducted jointly with the Perm' Polytechnical Institute were also taken as a basis for the plan of the 10th Five-Year Plan. The factors, which determine the attitude of workers of all categories toward labor, their cultural and technical level, the social adaptation and the turnover of personnel, were studied. The materials of surveys of more than 20,000 workers at 14 enterprises of the combine, at 2 construction administrations, the Noril'sk Planning Institute and the management of the combine were gathered and processed on a computer.

The organizational work, which preceded the drafting of the plan of social development, was directed by the methods council of the combine for social planning. Seminars were held with managers of different levels. The results of the studies were discussed extensively, the plan was approved at a city meeting of the party and economic aktiv. But, of course, the monitoring of the implementation of the outlined social measures turned out to be most difficult.

It turned out that the sociological services of enterprises usually choose for themselves specific themes. At the combine, for example, the turnover of personnel and adaptation, the structure of free time, the life plans of school children, the business qualities of managers and others are included among the themes. They are all dictated by vital necessity. Take, in particular, the turnover of personnel. It is quite stable: in 1975 its indicator for all the taken steps decreased as against 1971 by only 1.5 percent, in 1976-1977--by another 0.8 percent. Moreover, in recent years the coefficient of the turnover has begun to increase. The question arose: Is it not possible to control this process, if the adaptation of school children, who know not by hearsay what the north is, is studied more attentively?

The studies on the theme "The Life Plans of Graduates" showed: 71 percent of those surveyed intend to leave Noril'sk, and half of them noted that leaving was due to the limited opportunities for continuing their education, 36 percent expressed the desire to live in a large cultural center and 26 percent stated that they are leaving with their parents. The graduates planning to stay in Noril'sk explained this in the following manner: relatives and friends live and work in Noril'sk--81 percent; it is possible here to study and to work in one's specialty--57 percent; they do not want to leave their native city--53 percent; the north is appealing--33 percent.

The longing to leave is quite great. However, not 29 percent, but 55 percent really remain. A portion of them, of course, retain the desire to leave. But they, too, are a manpower resource of the city. In order to utilize it, one must know the outcome of the well-known dilemma: where is one to go, to study or to work? Of all the graduates, 72 percent are oriented toward studies and 28 percent are oriented toward a job; of those who intend to stay, they are respectively 53 and 47 percent; yet not 53 percent, but half as many enroll in local technikums and higher educational institutions.

Thus, the working class is receiving a reinforcement from the schools, but a poorly trained one. But production needs trained and skilled specialists. Therefore, having compared the number of graduates of the schools of the city with the possibilities of their enrollment in higher educational institutions, the administration

of the city made the decision to expand greatly the network of secondary vocational and technical schools. With allowance made for the fact that those leaving to study, even without passing the competitive examinations, as a rule, do not return to Noril'sk, it was decided to "bring" higher educational institutions here. Admission commissions of various higher educational institutions, including the Leningrad Institute of Mining, have been working in the city for several years now; in 1975 a day department for the training of construction engineers was opened at the Noril'sk Evening Industrial Institute.

The students of the city for 2 years undergo on-the-job training at the interschool educational production combine. A survey was conducted among them in order to find out how appealing the occupations, in which they are being trained, are to them. Of the 18 occupations in which instruction is conducted, 13 were among the appealing occupations. All the graduates, who have mastered the specialties of driver, electrical fitter of control and measuring instruments and automation equipment and lathe operator, will be able to obtain a job at the enterprises of the combine, automotive mechanics--only 70 percent. The need for radio operators, television experts, seamstresses, clerk-typists and draftsman-detail drawers makes up only 1-2 percent of the students. The occupations of mason, fitter-sanitary engineer and carpenter-concrete worker, the need for which is quite great, interest the graduates least of all. The creation within the administration of personnel of the combine of a bureau of vocational guidance was one of the suggestions on the decrease of this discrepancy; a consultation office for the choice of occupation is being set up on the basis of the educational course combine and the division of technical and economic education.

The next theme of the study is: what promotes the attachment of personnel to Noril'sk. The study of the factors influencing the efficiency of the labor and the stability of the regular labor force showed that the attitude toward work and the satisfaction with labor and the specialty are the main ones. The potential turnover is nearly twofold higher among those who are discontent with their job. In all 62 percent of the surveyed workers and 79 percent of the engineering and technical personnel and employees of the combine are content with their job. Moreover, the overwhelming majority of the workers rated their specialty considerably higher than their job. Hence, there are substantial shortcomings in the organization of labor, working conditions and so forth. The public health conditions of labor, the state of the equipment, the supply with materials and tools, the amount of the wages and bonuses and personal service received a relatively low rating of those surveyed. The studies established that it is possible to increase the satisfaction with work in different ways: increase the wages, change the content of labor (increase the level of mechanization, introduce elements of creativity), make the schedule of the workday flexible, offer the opportunity to improve one's skills and so on.

One-third of the surveyed workers expressed discontent with the public health conditions of labor. Therefore measures on their improvement were envisaged first of all in the plan of social development. With respect to the provision of sanitary and general facilities and health centers the plan was exceeded, more than 200 measures on labor safety techniques, industrial hygiene, the improvement of working conditions and others were implemented. Thus, devices for dampening the vibrations of the cabs of drilling rigs were introduced, the replacement of explosives, which have a harmful effect on the body of man, was carried out, the motor vehicle repair shop in the administration of construction was renovated, recommendations on

vitamin correction were elaborated, subsystems of the automatic processing of medical statistical information were put into operation and so forth.

The cooperation with basic science determined the special place of the theme of the improvement of the way of life among the other studies at the combine. One of the characteristics of the way of life of the workers is a high level of culture, which finds expression in such indicators as education, the number of books read, the subscription to periodic publications, the watching of television programs, participation in public work and creative activity. But there are also other traits which were discovered among a portion of those surveyed: the orientation when selecting a job not toward the content, but toward the wages; a low interest in continuing one's education; the predominance of the simplest types of creative activity; an inadequately realized attitude toward public work; the not always efficient use of free time, the predominance in it of trivial and passive pursuits. To be sure, causes which require study lie behind all this. For these shortcomings lead to the emergence of others; consequently, special long-term measures are required. Such a program is outlined in the plans of social development for the 11th Five-Year Plan.

Among the promising directions it is possible to name the scientific elaboration of a system of the control of the processes of social adaptation. For its successful functioning it is necessary to set up a center for hiring and job placement, at the disposal of which it is necessary to place a dormitory for those who have just arrived and are being registered for a job. Within the competence of this center there should be:

general information on the city and the combine;

vocational guidance, occupational advice and occupational selection (with the use of psychodiagnostic methods according to a list of the occupations needed at present);

sending to the enterprise for acquaintance with the working conditions and for talks on job placement;

a medical examination and physiological occupational selection (the determination of occupational suitability), in case of a negative decision the return to the office of vocational guidance or occupational selection;

the transmission of instructions on labor safety techniques and fire safety;

the registration of the residence permit (for those demobilized from the Soviet Army, the obtaining of a passport);

sending to a dormitory;

in case of need, sending to courses at the educational course combine (vocational training).

The final registration for a job takes place in the personnel division of the enterprise.

Either a computer center or continuous communication with a computer center by means of peripheral devices is necessary for the efficiency of the work, as well as the possibility in the future of carrying out the monitoring of adaptation and the analysis of the turnover.

The development of a automated system of the control of social processes is another promising direction. Its outlines are already being divined quite well.

It is possible to realize what has been outlined, if the sociological service of the combine is strengthened. The control of social processes is a necessary element of the accomplishment of the tasks of increasing production efficiency and forming a harmoniously developed individual. And although each step requires increasing expenditures (at least at the first stage), they pay for themselves subsequently as compared with the existing methods of control.

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Way of Life

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 4, Apr 82 pp 95-97

[Article by Doctor of Philosophical Sciences Professor Z. I. Faynburg, head of a chair of the Perm' Polytechnical Institute: "'Natural' Benefits to the Forefront"]

[Text] The authors of the selection speak about the peculiarities of the way of life of Noril'sk residents. "What do these peculiarities consist in?"--such is the question which the editorial board addressed to Doctor of Philosophical Sciences Professor Z. I. Faynburg, head of a chair of the Perm' Polytechnical Institute.

At present the task is arising to increase sharply in the manpower balance of the country the proportion of those employed in the north and east. In such a situation the principle of "the special work shift" can no longer be the only means of solving the personnel problem. Conscientious workers of high skills will be needed more and more in these regions. For this reason the very form of the supply of the north with manpower resources must also be changed radically: it is time to change over to work primarily with permanent personnel, having changed substantially in this case both the very level of life support and the forms of the stimulation of labor. In the future the problem of personnel will be solved, in our opinion, according to the formula: high wages plus the possibility of their optimum realization in the north itself plus the optimization of "the northern way of life" as a whole.

And today a significant portion of those who went to the north due to money find it hard to name the goals of the spending of this money, which are optimal even for themselves. "More money is better than less" is the only formed philosophy. In the north the backing of high wages with goods has not been established and has not been substantiated by socioeconomic calculations. At times the northerners spend even their vacation not in an especially sensible way and without great benefit

for themselves, and frequently return from it ahead of time completely tired out and without having improved their health.

High wages, of course, must be retained. But "natural" benefits should be placed in the forefront: housing of an improved type, the more complete and rapid meeting of the needs for it, a special set of day-to-day and especially durable goods, which would be added to the very order of life in the north, special measures on maintaining and strengthening the health of workers and so forth. Cultural services requires especially great attention. More opportunities should be created not only for cultural relaxation, but also for studies and independent creative, including scientific, activity, the level of information of the residents of the north should be increased and so forth. For today even with respect to the possibility of using a book (especially a rare, special one) the same Noril'sk is in an incomparably worse situation as compared with the large cities of the center of the country. Special conditions should be created for the everyday pursuit of physical culture. Perhaps, it is necessary to build special riding schools, which are directly connected by passages with housing, or special halls in apartment houses and so on.

It is necessary to think about the special organization of vacation for the residents of the north. For a part of the vacation it would be advisable to grant them a place at a sanatorium or dispensary, for another part to afford them an opportunity in an organized manner to travel about the country, to see its sights, to go abroad and, finally, for the third part to see relatives, to make a trip to "one's mother-in-law for pancakes." No matter where the resident of the north is during vacation, he should not have any worries about a place to sleep: he received the keys to an apartment or a room in a hotel, lived there the necessary time, then gave the key to others. The northerner will improve his health, gather impressions, see relatives and, on the whole, will properly take a vacation, will be ready physically and mentally for the next lengthy labor cycle. Such a form of material security will be conducive to the further development of a socialist attitude toward labor at the enterprises of the north.

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Personal Life

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 4, Apr 82 pp 97-112

[Article by Candidate of Economic Sciences Boris Zhdanov (Novosibirsk-Noril'sk-Novosibirsk): "The Force of Attraction"]

[Text] The Magnet of the New

The north has always been associated with the romanticism of trailblazers. Here one has to treat in a new way the most common thing--metal, equipment and man. One must plan, forecast, fulfill the plan and monitor in a new way. It is necessary to introduce correction factors for the cold, the wind, magnetic storms, as well as the rhythms of day and night, the scales and requirements. The situation is less favorable for the conservative than for the innovator. Daring, risk and initiative find fertile soil in the zone of permafrost.

I will tell more about the innovations. But the conversations with A. I. Kozyura, chief engineering of the Nadezhda Metallurgical Plant, remained most of all in my memory. "Nadezhda," he related, "is a concentration of innovations and, one must not be afraid of this word, risk. The entire country is well aware of the combining of the cycles of construction and the installation of equipment, which saved years at the Volga Motor Vehicle Plant. At the Nadezhda Metallurgical Plant the construction was performed with consideration for a technology which did not exist in finished form! Moreover, the new technology differed radically from the existing technology. Here an oxygen station--the first in the sector in productivity--was started up, the plant electrical system was converted to the progressive voltage of 10 kV, although the output of the corresponding electrical equipment had not yet been assimilated in the sector. On top of it all the new technical decisions and environmental protection required major investments."

The training of the future operators of the future equipment was carried out at the same time as the construction. It was seen to that special textbooks were published by the Metallurgiya Publishing House. The training and improvement of skills, thus, were accomplished on the move. As a result, specialists prepared for constant changes and managers meeting the most modern requirements are increasing at the plant.

For innovations it is also possible to go to V. I. Marchenko, where at the Komso-mol'skiy Mine not only diesel machines with pneumatic drive operate. The methods of appointment to the positions of managers, which are used here, are interesting: the candidates are given an opportunity to show their worth; precise criteria of success and failure are established. If you manage, advance to your heart's content! If you do not, you will receive a demotion. But you can be nominated again. Such mobility facilitates the stimulation of managers. It is possible to move up, down and up again!

One March evening, after visting the nickel plant, on the way back Yu. G. Yushkov, chief of the hydrometallurgical department, sat down beside us. Someone joked about leaving work early, but he calmly explained that he comes to work and leaves work "by the bell." In practice the attitude toward such managers is distrustful: either there is nothing to do or he is neglecting his duties. At Yu. G. Yushkov's place, as I found out, the troubles had been eliminated: he has set up the efficient management of hydrometallurgical production and organized the informal comprehensive training of all the personnel of the department in economics and technology.

In August 1981 I was again in Noril'sk and dropped in specially at the plant to chat in more detail with Yu. G. Yushkov. Yuriy Georgiyevich had already received a promotion. But at his new place he also remained true to himself. At first he "unravellled" the system of pipes, then the system of interrelations in the collective, where previously both deceit and connivance occurred. After straightening things out the training of the personnel began. Arrows, which indicate clearly what is flowing from where and where it is flowing to, have now been painted on the pipes. Such "arrows" have also appeared in the interrelations. On the "mainland" I have encountered many like Yu. G. Yushkov, but, it seems to me, they have fewer opportunities to realize their ideas: external monitoring is stricter, one does not have one's own Nadezhda, one's own Noril'sk.

After Work

After the shift the metallurgist, the miner and the concentration specialist begin to perform, as sociologists say, different roles. They should wash up, change clothes, go home, settle household affairs, relax, mix a little and, perhaps, engage in a sport or amuse themselves.

The first steps after work are to the administrative and service combine.

They get there by a passage, so that there is no need to go out on the street. On the advice of my colleague L. S. Korovin in this passage it is possible to stray aerosols against the common cold--so to speak, inhalation on the move. I have twice visited this palace of personal service, culture and amusements. Here it is possible to do some reading and to play some volleyball, to watch a movie and hear a lecture. On the first floor I was asked whether I had the need to have something mended, for example, to have a button sewed on--on a business trip nonetheless. By chance all the buttons were in place, but I was pleased by this willingness to help.

The working conditions at the copper plant, undoubtedly, need improvement. But this is a fact: after the placement of the administrative and service combine into operation at the copper plant the personnel situation changed, the state of health of the workers and the structure of their free time improved. A considerable social impact also lies in the fact that people want to emulate the experience of the copper plant, they want to repeat it. The fact that the director of the plant was the initiator of the creation of the administrative and service combine is playing not the final role.

On Wheels

The most mobile people in the country, unexpectedly, live in the isolated city of Noril'sk. According to estimates, they fly and ride more than anywhere. On a TU-154 it is a stone's throw to Krasnoyarsk--a flight of less than 2 hours, and from there to Moscow it is without a fuss! If, of course, there is not a blizzard.

The residents of many cities have forgotten about the old little cars of electric trains, which convey Noril'sk residents to Alykel', as far as Kayyerkan and the Nadezhda Metallurgical Plant. They arrived in Noril'sk back in the late 1940's. The dilapidated electric trains of an obscure color nevertheless are performing their service conscientiously. They move unhurriedly, as if being afraid of falling apart, swaying and jerking. In the fall it is a bit boring on them: on both sides of the track there are unrooted soil and small swamps, the telegraph poles have assumed the most diverse poses at an angle to the ground. In winter it is bleak. For this reason the passengers prefer motor transport.

The motorists, it must be said, do not disappoint one's expectations. Both before, when Noril'sk was confined to the city, and now, when the arms of passenger traffic have stretched to the settlements of Talnakh and Kayyerkan, as well as to the airport in Alykel', motor transport is working in the name of the passengers. Among Noril'sk residents there are many people from Leningrad, therefore comparisons of a "latitudinal" nature are made: I came to Leningrad on an assignment, I got frozen there at the stops, while at home the buses drive up as if to order, although the temperature is about 0°. Although interruptions also occur.

We talked for about 2 hours with N. V. Andrukhov, director of the Noril'sk Passenger Motor Transportation Association, who is also a Leningrader. Noril'sk residents know that the spacings of bus traffic are 5 minutes. These spacings are observed, often owing to the self-sacrifice of the drivers. At times a blizzard whirls so, that it is necessary to move in a column. If the formation did not stand up, you could get lost. There were instances when the wind forced out the windshields of the cabs. The buses, of course, are not of the northern design, which adds worries with repair and maintenance. And still, in spite of the difficulties, it is planned to shorten the spacings of traffic to 4 minutes. For the convenience of the passengers the buses of a single route during peak hours are put out on the line in pairs--one after the other.

For the present everything is fine. Well, and what if you look a little further, to the future? Bus drivers receive rather good wages, but much is expected from them, while the conditions are worse than on the "mainland." And nearby, at the combine, for truck drivers the situation is more appealing. And then one fine day, or rather on a gloomy polar night, the bus will not appear--there will be no driver.

Frequently they want to solve the problem of a shortage of drivers by increasing the benefits. But what if there were fewer people? Would you put a smelter behind the wheel? Apparently, another route is needed, and the automotive industry should follow it. The buses being produced by it are not very suitable for the conditions of the north, and in general are unfunctional. Why, N. V. Andrukhov asked, are there seats on a bus? They are not necessary for a trip lasting not more than half an hour. Or let there be ones which during the peak hours fold up against the side walls. Roomier vehicles are a decrease of the number of drivers, and not in the least fewer conveniences, especially in winter, when in ordinary buses between the seats people push their way through at the cost of overtaxed nerves and torn off buttons.

Several times I have had occasion to hear about the Noril'sk "subway." They say that in the rock under the city there are many drifts, in which it would be possible to lay underground transportation routes--in the warmth and with comfort. It is difficult to say what there is more of in this talk--fantasy or reality. However, the fantasies of the Noril'sk residents have already more than once become a reality.

The Main Concern Is Health

After a mechanized journey through the drifts of the Komsomol'skiy Mine along with Director V. I. Merchenko we underwent a treatment that is accessible to all the miners leaving the shift--a sauna. Not only a pleasant one, but also one beneficial to one's health. Of the three polar components--sun, air and water--mainly the last one counts for the strengthening of health beyond the Arctic Circle. The sun poorly helps the body assimilate natural vitamins; the air, which is colored by the "fox's tails" from the stacks of the copper and nickel plants, drives the people indoors and forces them to leave for relaxation a bit further into the tundra. Water remains!

The health of adults begins with children--so said combine director B. I. Kolesnikov. And he began to build swimming pools at kindergartens. Not without reason are Noril'sk residents proud of the fact that among those vacationing on the Black Sea they and their children are notable for the nearly 100-percent ability to swim.

After a week's stay at the Noril'sk Mining and Metallurgical Combine they let me into the Arktika swimming pool. The 2 hours of bathing with the practicing water polo players and members of the health groups made it possible to completely throw off the burden of fatigue, which had accumulated from constantly being within four walls.

The medical men in the north have more than enough work--both scientists and experienced workers. In recent times they have begun to be asked more and more often the question: Has the north been shown to everyone? It turned out that it has been shown to far from everyone. But a system of the selection of people for labor and life in the Arctic did not exist, they are only beginning to develop it. Here the following discoveries, for example, are being made: it was believed that the more a person in the cold moves, the more favorably this affects the body. However, in the high latitudes it happens differently. The "European" carbohydrate diet must be replaced by an "Asian" diet with the predominance of soluble fats and proteins.

Apparently, the scientifically sound elaboration of a system of life support in the north will take much time. But a change is necessary, and it was indicated in two "five-year plans of health"--for 1976-1980 and 1981-1985. I was present at the meeting in the city soviet executive committee, at which the results of the first five-year plan and the outlines of the second five-year plan were discussed. In the speeches the still unusually lofty words "comprehensive" and "goal program" were heard more than once. Of course, from the strict stand of the methodology of the goal program approach the initiative of the Noril'sk residents needs finishing touches, but this is not the crux of the matter. The main thing is the willingness to apply serious scientific tools to the most disturbing aspect of the vital activity of northerners.

The survey of experts--the managers of various services, institutions and organizations of the city and the combine, which was conducted in August 1981 under the supervision of I. S. Aristov, convinces us that health holds first place among all social concerns. I suggested to the experts that they rank the needs of the people, in order to distribute the available resources more wisely. The list of needs was taken from EKO, No 6, 1981 (see the second page of the cover). The need for the strengthening (development) of health held first place in the total, its average rank is 2.3, the need for housing was in second place (2.7), the need for labor which satisfies those surveyed was in third place (2.8), the need for material prosperity was in fourth place (4.9) and so on.

The data of studies, which sociologists announced at the Krasnoyarskiy Kray applied science conference "Socioeconomic Programs of the Efficient Use of Manpower Resources" in October 1981, serve as alarming, but at the same time significant evidence of the increase of attention to health. Up to 20-22 percent of the migrants from Krasnoyarskiy Kray link the possibility of remaining there with the improvement of the environment. Such conclusions are a completely new phenomenon.

Economical Health Care

In the five-year plans of health it is possible to distinguish two parts--a traditional one and a new one. The former is connected with the construction of a polyclinic center in Kayyerkan, a new building of the medical and sanitary section in Noril'sk and other medical and health improvement institutions. Construction is

expensive, but, as the studies of specialists of the Siberian Department of the Academy of Medical Sciences, as well as the Institute of Economics and the Organization of Industrial Production of the Siberian Department of the USSR Academy of Sciences showed, there is no direct dependence between the increase of the number of hospital beds and the decrease of the incidence of illness in the region. Of course, standards are necessary for traumatology, infectious diseases and several other things: here one cannot do otherwise. But the simple and effective medical and preventive methods which, for example, are used in the offices of the Valek Sanatorium and Dispensary, with its unobtrusive attitude toward each person, the calm pace of life, with the cheerful atmosphere in the vestibules, where northerners see verdure and birds, where fountains of water murmur and squirrels jump, are sufficient in many instances. In conjunction with the simple techniques of preventive medical treatment this atmosphere has a healthy effect on man. If you have gone to Noril'sk and not seen the Valek, you have missed much.

In our conversation the combine director several times singled out the word combination "health--economics." Not only in the customary sense: from one the other is better. This is well known. It is another matter when the question of the economical strengthening of health is raised. Let us approach this from the standpoint of the combine: it needs healthy personnel, and it spares no expense on treatment and preventive treatment. But we are, after all, economists, V. I. Kolesnikov emphasizes, and we know that resources are limited, they must also be invested in education, culture and personal service. One must extract more from what is limited and take the path of intensification. During the past five-year plan, for example, the designers proposed the design of a school building for the north. Scope was felt in it, unusually high illumination was suggested. They obviously did not take into consideration the energy expenditures when alluding to the north and the peculiarities of sight. They invited physicians from Krasnoyarsk to analyze the design. The latter came to the conclusion: such high illumination is not necessary. There are required for vision its changes subject to the degree of fatigue of the optic analyzers. The design was revised, it became more economical.

I familiarized myself in detail with the work of one of the ophthalmologists mentioned by the combine director--V. F. Bazarnyy, and was present at an operation he performed. V. F. Bazarnyy, who discovered the extensive prevalence of myopia among graduates of the schools of Noril'sk, could have taken the traditional route: he could have required an ophthalmological dispensary at the combine. And, no matter how expensive this might have been, the combine would have agreed: a nearsighted reinforcement of the personnel does not suit it. However, the ophthalmologist knew very well the low impact of the dispensary system. At that time, during the search for another means, the ophthalmic simulator--a simple and inexpensive gadget with effective performance--was also developed. The need for a dispensary disappeared.

More than 30 types of sports are being encouraged in Noril'sk. On nice days off the old and young take to skis. First Secretary of the Noril'sk City Party Committee B. M. Blagikh, in endeavoring to emphasize the mass nature of ski trips, recalled that parents took year-old children with them in knapsacks on their back. The Noril'sk hockey players, water polo players and cyclists are coming out in various leagues for the championship of the country among the masters. The management of the combine is supporting by its personal participation such an attitude toward sports. Many managerial workers of the combine, for example, are habitues on the mountain skiing route.

But whatever the case may be, there are problems and there are reserves for their solution. In the conversation with the designers and urban developers of Noril'sk the conclusion that in the case of limited material resources the tilt in the direction of the increase of the pursuit of physical culture and sports at home or not far from home increases, was natural. People get tired at work, it is a long way to the sports facilities, and they are not available at every hour. So far housing has not been developed functionally with allowance made for the need for the physical development of the tenants. It is necessary to reform. Most likely the desired solution will not be achieved immediately, but great potentials of the economical development of health are contained in it.

Under a Roof

If you rank the factors, by means of which the enterprise will attract manpower most easily, the provision of housing will take first place. An apartment is preferred over wages, working conditions and the climate. It is even better if later, after a certain number of years, it is possible to exchange it in a planned manner for a more convenient place of residence.

In Noril'sk, of course, there is no surplus of housing, but they hold out prospects for the person coming, and not bad ones. The attraction is increasing. True, the urgency of the problem is also giving rise to paradoxical situations. Cases are mentioned, when retirees live somewhere near Moscow, while they get income from renting out their former apartment in Noril'sk. But these are precisely cases. The main thing does not lie in the abuses which they are combating. It is more important that in the plans of the combine the strategy of providing the population with housing is clearly visible and the outlines are given: by the 50th anniversary of the combine in 1985 to provide 15 m² of total area per resident.

Meanwhile such a strategy was formulated not all at once. Back in the early 1970's it was not suggested to provide everyone with separate apartments. There was no strategy, the rate of movement slowed. Such was the objective law: if you do not discern the future today, tomorrow it will be even harder to accomplish what has been outlined. At any rate, as the designers and urban developers said, in Noril'sk there are apartment houses of series which are suitable only for the middle latitudes. For the inhabitants of the Arctic they are uncomfortable, bleak and unappealing. The housing of the new building site is more functional, new, quite good, in the estimation of specialists and workers of the combine, series and materials, which help Noril'sk residents to sense less the unavoidable peculiarities of living among magnetic storms and snowstorms, are being used in it.

The search for means of the fair distribution of housing is continuing. They are enlisting the public in the distribution and are using computers. This will make it possible to establish promptly the use of available housing, to manage it and to eliminate abuses.

Working Conditions

On a winter evening in March, accompanied by V. V. Savchenko, chief of the Administration of Personnel of the combine, and Yu. A. Barklyanskiy, chief of the Division of Sociology, I got out of the GAZ truck near the nickel plant. At one time Savchenko managed a shop here. He told not without pride about the people and

production and got carried away so that he forgot to warn me about the tapping of slag. And it would not have hurt to warn me.

Suddenly my companions raised their scarfs, covering their mouth and nose. I attributed this gesture to a fall in temperature and smugly thought that I seemed to have nothing to worry about. But then something strange happened: I could no longer breathe, neither in nor out. It turns out that scarfs protected against the volley attack of the gas being given off by the hot slag.

Then for several months the specific smell gave a reminder of itself, one had only to turn to the collar of the overcoat or jacket, which I wore on that March evening. But this was a fleeting encounter with the conditions under which the workers constantly worked. Among the cold metal of the cars and cranes, amidst the bubbling lava in the ladles, the roar, the fumes and the pungent vapors they calmly did their work. Some even ignored the "nipples"--as they somewhat disdainfully call the gas masks there. These smelters and the crane operators, who spend the entire shift above, where the concentration of gas is the highest, are hardy people.

But, while admiring the endurance of the Noril'sk workers, I could not but formulate several questions.

Thus, the first question concerns the working conditions. I addressed it to many workers of the combine. Of course, the nickel plant is old, renovation, as I was told, would cost hundreds of millions of rubles. It is impossible to shut it down: the country cannot do without nickel. They awaited the placement into operation of Nadezhda--the Nadezhda Metallurgical Plant, which would make it possible to take a respite. But then the first section of Nadezhda was put into operation, while there is no time, it is impossible, it is not the time to take a respite.

Whoever has been at enterprises of ferrous metallurgy, for example, in Magnitka, will confirm: the working conditions are a bit worse for nickel smelters. I asked the question: Is it impossible to pull themselves up to their colleagues in ferrous metallurgy? Yes, the specialists of nonferrous metallurgy responded, it is impossible. The technologies, they say, are incomparable with respect to complexity, and therefore it will be necessary (at least for the present) to accept the difficult conditions.

However, doubts remained.

First, the certainty that it is too early to think about the improvement of working conditions, is dwindling with each year among the Noril'sk residents themselves.

Second, the base of mechanization, which is necessary for this, is simply weak--it is incomparable with the one which exists, for example, in Magnitka.

Third, Nadezhda convinces us: the working conditions can be much more healthy in nonferrous metallurgy as well. Even though they are worthy of greater expenditures than in old technological processes. But the health of people is dearer.

In addition to Nadezhda, I also visited the Komsomol'skiy Mine. Much of interest is connected with the affairs of the collective of this mine, but I would like to note first of all the machine-worker ratio and the working conditions of the miners. Here

unusual machines--diesel machines with pneumatic drive--work under the ground. Many initially doubted whether this equipment would work, whether the exhaust would poison the air and so forth. The apprehensions proved to be unwarranted, but then the labor of the miners changed in many respects: it became easier, more interesting and more appealing. The miner became at the same time a machine operator. They took me for a ride on the machine: the driver maneuvered it no worse than a reckless driver on a wide road.

It turns out that it is possible technically to create more appealing working conditions. And the workers know this. I believe that this fact also draws people here, to Noril'sk. Otherwise it is difficult to explain the attachment to the same nickel plant, even with allowance made for the wages, which come to 700 rubles a month.

The Traces of Attraction

Our entire account so far has boiled down to what attracts people to Noril'sk. Without having exhausted it, it is time to ask the question: Is there really convincing evidence of attraction?

At first glance, the signs are noticeable: thousands of people annually come to get work at the enterprises of the combine. Some organizations, which have settled down here and do not want to withdraw, although their relationship to production is more than remote and there is a place for them somewhere 1,000 km to the south or the west, even worry the executives of the city and the Noril'sk Mining and Metallurgical Combine. Moreover, the number of them is tending to increase. The city is swelling, although it has topped the proposed limit as it is. Hence, are there signs of attraction?

But an outflow of the population is occurring at the same time. They are departing without having worked the set 3 years in accordance with the contract. Demobilized servicemen do not want "to cast anchor," although before mobilization their attention is urgently oriented toward Noril'sk and they are offered benefits. There are fears that the influx will subside. In the conversations nearly all of the collocutors recalled: the difference in the wages, which the combine can offer at the beginning of the path of labor at it, as compared with the "mainland" is being felt less and less.

A fair proportion of the Noril'sk residents have given their city 10, 20 and more years. They are considered patriots of Noril'sk. And that is how they consider themselves. No one is surprised when someone who has left after some time returns to the customary "island." I spoke with several of the people who had made such a "lateral movement." The impression is formed that it is not Noril'sk which drew them back, but rather the city for which they left pushed them back. The former contacts had been lost, the way of life differs sharply here and there. It is possible to become accustomed to, to be fit into the new, but it is difficult, the age is wrong. As a result there is the returning. Sooner to the more customary than to the more favorable.

And again you hesitate: Is not the attractive force of Noril'sk decreasing, should not something be changed, and if so, then precisely what? Perhaps for a portion of the Noril'sk residents. Many questions merit studying. The answers to them are especially important for the future of Noril'sk.

What Kind of Resident Does Noril'sk Need?

We have spoken about the stable portion of the population. Now it is a question of something else.

I have heard many times and from different people laments about the fact that an appreciable portion of the Noril'sk residents regard their stay in the north as temporary. Hence the adverse phenomena like the disrespect for daily life, comfort, even health: why take care of it--it is important to earn, and I will get some treatment there.

A seditious thought emerges on the basis of such conversations: Is it, perhaps, not worth lamenting migration, but better to form deliberately the temporary residents of Noril'sk? Must one be delighted with the old local residents? As medical men claim, here by the age of 45 some disease is almost always discovered.

But if such a strategy is adopted, it will be necessary to elaborate different measures than today.

At first such a suggestion did not receive support: it sounds too paradoxical. But with time, rather, with the completion of the construction of the Nadezhda Metallurgical Plant, the attitude changed. Confirmation of this was found in the comprehensive goal program on manpower resources, in the drawing up of which I was invited to participate.

After lengthy debates the usually amorphous program "Manpower Resources" turned here into the precisely formulated "The Control of the Migration of the Population of the City of Noril'sk." Its goal is as clear as possible: to see to it that the population does not grow. With the completion of Nadezhda new construction in Noril'sk decreased significantly and, hence, the possibilities for expanding the sphere of culture, personal service and housing decreased. If the size of the population grows, living conditions will deteriorate. The executives of the city and the combine cannot agree with this. Noril'sk should not swell any more.

Many cities, which have desired to decrease the growth of the population, are known from practice. Nearly all of them had little success in realizing this desire. What is the reason? Apparently, not last of all is the fact that such a desire is one-sided: close entry! In Noril'sk it is being planned to take steps on the stimulation of departure, but first of all those for whom it is truly expedient to leave the north. And let new young personnel come to replace them in the vacant apartments.

A minimum of two major steps will have to be made in accordance with this program. First, a filter will have to be placed at the entrance, that is, when selecting those who wish to come to Noril'sk. The time has come to reject the confusing filling of workplaces with whomever one can. To sift out first of all those for whom the north is categorically contraindicated. While Noril'sk is isolated, while the railroad has not reached it, it is relatively easy to do this. Medical men and sociologists are already working on the criteria of suitability. Of course, those who have passed through the filter need all sorts of preferences. What kind is a special subject, but at any rate more than today.

Second, those leaving should not be simply jettisoned like ballast. It is a major, but necessary task to help them to feel at home on the "mainland." It is difficult to accomplish it now, when they have not yet seriously thought about this. The program will help to elaborate measures and to determine how it is possible to accomplish what has been outlined better, from what assets.

The program makes it incumbent to look ahead, into the future. I have already written that a long-range view is characteristic of Noril'sk. After the conversations with B. I. Kolesnikov, I. S. Aristov, Deputy Director of the Combine for Economics B. V. Kazakov and other executives we attempted to construct several scenarios of the future, that is, the directions of the development of the city and the combine in the case of certain assumptions. It was important to show the method. We were not specially prepared for this, so that the impression remained that in individual cases the future was based by us on a projection of the present, which for certain will not be repeated. Not everyone is prepared for "surprises." And routine is frequently the cause of this.

My companions confirmed this conclusion. V. V. Savchenko expressed himself as follows: "There are many routine chores. If they gave me time to think, I would deal with the future without fail." "But no one will give this time," I objected. "True," he agreed. "What is the solution?"

Together with V. V. Savchenko we came to the conclusion: one must check every step in the routine against the future and measure its future consequences. This must be learned. In Noril'sk favorable conditions exist for such training, and life urgently requires it.

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